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a discourse upon the occasion, on the objects of the Society, its history, labours, and prospects.

3. *Resolved*, That a Committee of seven members be appointed, to devise and carry into effect such arrangements as may be proper for the centenary celebration.

The resolutions were adopted: and on motion of Dr. Chapman, Dr. Robert M. Patterson, one of the Vice-Presidents, was unanimously chosen to deliver the anniversary discourse.

Dr. Chapman, Mr. Kane, Dr. Ludlow, Dr. Dunglison, Mr. Fraley, Professor Bache, and Mr. G. W. Smith, were appointed the Committee under the third resolution.

Mr. Walker presented a letter, addressed to him by the City Solicitor, on the subject of the claim made by the City against the Society; which was referred to Mr. Kane, Mr. G. W. Smith, and Mr. Fraley, with instructions to report the state of facts of the case, and what action it is expedient for the Society to take thereon.

Stated Meeting, March 17.

Present, twenty-seven members.

Dr. BACHE, Vice-President, in the Chair.

Mr. Ellwood Morris, a member elect, was presented, and took his seat.

Letters were read:—

From the Imperial Society of Naturalists of Moscow, dated 12/24 Sept., 1842,—the Cambridge Philosophical Society, dated 14th Nov. 1842,—and the New York Historical Society, dated 7th March, 1843,—acknowledging the receipt of the Transactions and the Proceedings of the Society:—

And from the Rev. William Cogswell, D.D., Corresponding Secretary of the Northern Academy of Arts and Sciences, at Hanover, N. H., dated 14th March, 1843, inviting an exchange of publications between the Society and the Academy.

The following donations were announced:—

FOR THE LIBRARY.

Bulletin de la Société Impériale des Naturalistes de Moscow. 1842.

No. 3. 8vo.—*From the Society.*

Transactions of the Geological Society of London. Second Series.

Vol. VI. Part 2. 4to. London, 1842.—*From the Society.*

Transactions of the Cambridge Philosophical Society. Vol. VII.

Part III. 4to. Cambridge, 1842.—*From the Society.*

Report to the British Association for the Advancement of Science, on the Nomenclature of Zoology, June 27, 1842. 8vo. London.—

From the Association.

Iconografia della Fauna Italica di Carlo Luciano Bonaparte, Principe di Canino e Musignano. Fasc. XXX. ed ultimo. Folio. Rome, 1841.—*From the Author.*

Researches in Physical Geology. By W. Hopkins, M.A., F.R.S.

First, Second, and Third Series. 4to. London, 1839—1842.—

From the Author.

Inaugural Address of the Hon. Albert Gallatin, LL.D., President of the New York Historical Society. 8vo. New York, 1843.—

From the Society.

Constitution and By-Laws of the Northern Academy of Arts and Sciences; and First Annual Report of Curators. 8vo. Hanover, 1842.—*From the Academy.*

Survey of the Ohio River. By George W. Hughes, U. S. Topogr. Engrs. 8vo. 1843.—*From the Author.*

Instructions for Using Mr. R. W. Fox's Instrument for determining the Magnetic Inclination and Intensity. Published by order of the Lords Commissioners of the Admiralty. 8vo. 1842.—*From Mr. R. W. Fox.*

Journal of the Franklin Institute of the State of Pennsylvania.

Third Series. Vol. V. No. 2. 8vo. Feb. 1843.—*From Dr. Putterson.*

Spinal Diseases, their Causes and Treatment, &c. &c. By Usher Parsons, M.D. 8vo. Boston, 1843.—*From the Author.*

The Literary Age. Reynell Coates, M.D., Editor. Published by G. W. Ridgway. Nos. 3 to 15. 4to. Philadelphia, 1843.—*From the Publisher.*

Annotazioni sul Veleno Viperino, del Cav. Conte Jacopo Gräberg de Hemsö. 4to.—*From the Author.*

Degli Ultimi Progressi della Geografia, del Cav. Conte Jacopo Gråberg de Hemsö. 8vo. Milan, 1842.—*From the same.*

An Eulogium on William P. Dewees, M.D., &c. &c. By Hugh L. Hodge, M.D. 8vo. Philadelphia, 1842.—*From the Author.*

Grammaire Egyptienne, ou Principes Généraux de l'Écriture Sacrée Egyptienne, appliquée à la representation de la langue parlée. Par Champollion le Jeune, &c. &c. Folio. Paris, 1836.—*From Professor John F. Frazer.*

Mr. Peale presented a copy of the letter dated 16th December, 1785, which accompanied the donation from his father, Charles Willson Peale, to the Society, of the portrait of Dr. Franklin, now in the Hall. The portrait is by Mr. C. W. Peale, from the original by Martin.

Prof. Henry D. Rogers submitted to the Society a brief account of the earthquake of the 4th of January of this year, stating some general views at which he had arrived concerning the direction and velocity of its transmission, and the nature of the movement.

By a reference to the facts in his possession, he showed that the earthquake was felt from beyond the Mississippi to the coast of South Carolina, and northward at least as far as Ohio and Indiana; and that this fortunate remoteness of the localities, both in latitude and longitude, tends essentially to promote the accuracy of the inferences deduced.

From a comparison of the observations at the different localities, as contained in the best statements collected, he endeavoured to show—

First. That the areas simultaneously disturbed were *linear*, or of the form of very elongated narrow belts.

Secondly. That the earthquake was progressive, and moved from west to east, the line of simultaneous disturbance shifting parallel to itself.

Thirdly. That it was thus propagated at the enormous velocity of *thirty miles per minute.*

Fourthly. That the facts of this earthquake lend decided countenance to a theory of the origin and nature of earthquakes, presented by himself and Prof. W. B. Rogers, in April last, to the Association of American Geologists, which attributes the movement to an actual billowy undulation on the surface of the liquid lava beneath the crust

of the earth, communicating to the latter its well known wave-like oscillation.

In the course of these demonstrations it was shown, that a comparison of the respective times of the arrival of an earthquake at three sufficiently distant places triangularly situated within the influence of the undulation, will enable us to calculate approximately the path and velocity of the wave, in all cases where it has, as in the instance before us, the form of a nearly straight line.

Major Graham had noticed the earthquake of the 8th of February last, at his house in Washington, at the N. W. corner of F. and Twentieth street West, three squares west of the Navy Department. The last and most severe shock which he felt, occurred at ten minutes before ten in the morning, mean solar time.

He felt the first agitation at about fifteen or twenty minutes before 10 o'clock, A. M. He was aroused from imperfect sleep, by a tremulous motion of the bed, which he at once referred to a slight shock of an earthquake. Having fallen into a doze again, he was a second time aroused by a similar shock, quite evident, though not severe: it caused the furniture in the room to shake. Soon afterwards he felt a third shock, so intense as to produce some apprehension that if it increased any in force, the house might fall. There was a sensible oscillation or rocking motion of the bed from north to south, or transverse to the direction in which he lay at that time. The furniture in the room shook with some violence, and a looking-glass, which stood upon a bureau, suspended within a square frame, standing in the usual manner upon a pedestal with drawers, was set to oscillating through an angle of about 50° , or 25° from a perpendicular in each direction. This last shock occurred at 9h 50m, A. M., as observed by Major G. in his room. Its severity caused him to rise and join the other members of his family. On entering the room of one of them, who was an invalid, in the second story of the house, and immediately below the room occupied by himself, and on inquiring if the shock was noticed, the reply was, that two distinct and evident shocks had been felt, the last and most severe, at 10 minutes before 10 o'clock, as noted by a mantel clock which was in view at the time. The bed in which the invalid lay was caused to undulate sensibly, from north to south, or longitudinally of its direction. At the same time, a bunch of keys, attached to a metallic ring, hanging by a

single key in the door of a wardrobe, was set in motion, so as to produce a distinct rattling. A similar rattling of the keys was noticed by the invalid alluded to, two or three times in the night, between 3 and 5 o'clock, A. M., as nearly as recollected, when there was no one moving in the house.

Dr. Patterson, recurring to some of the views taken by Prof. Rogers, expressed a doubt whether the phenomenon of the earthquake may not be more properly regarded as a motion of the earth's crust, imparted to it directly from the originating cause, without necessary reference to the movement of the fluid beneath; and he compared it to the vibrations of sounding bodies, whether transverse or longitudinal.

Further remarks were made by Prof. Rogers, Prof. Frazer, and Mr. G. W. Smith, on the same subject.

Major Graham described a Reflecting Lantern and a Heliotrope, used by him as meridian marks for great distances, in 1841, while tracing, in his capacity of U. S. Commissioner, the due North line from the monument at the source of the River St. Croix.

The lantern was constructed by Messrs. Henry N. Hooper & Co., of Boston, under Major G.'s directions. It was similar in form to the Parabolic Reflector Lantern, sometimes used in lighthouses, but much smaller, so as to be portable.

The burner was of the Argand character, with a cylindrical wick, whose transverse section was half an inch in diameter, supplied with oil in the ordinary manner. This was placed in the focus of a parabolic reflector, or paraboloid of sheet copper, lined inside with silver about one-twentieth of an inch in thickness, polished very smooth and bright. The dimensions were as follows:—

	Inches.
Diameter of the base of frustrum of reflector, - -	16.
Distance of vertex from base, - - - - -	3.75
Distance of focus from vertex, - - - - -	2.25
Diameter of cylindrical burner, - - - - -	.50
Diameter of a larger burner, which was never used, but which by an adapting piece could be easily substituted,	1.25

The instrument answered the purpose for which it was intended, admirably well, and was of great use in tracing the due north line. While it occupied the station at Park's Hill, 15 feet above the surface of the ground, or 828 feet above the sea, in the latter part of Septem-

ber, and early part of October, 1841, the light from it was distinctly seen with the naked eye, at night, when the weather was clear, from Blue Hill, whose summit, where crossed by the meridian line, is 1071 feet above the sea; the intervening country averaging about 500 feet above the sea, and the stations being 36 miles apart.

The light appeared to the naked eye, at that distance, as bright and of about the same magnitude as the planet Venus. Viewed through the transit telescope, of 43 inches focal length, it presented a luminous disc, of about 30 seconds of arc in diameter. From its brilliancy at that distance, Major G. has no doubt that it would have been visible to the naked eye at 50 miles, and through the telescope at 100 miles, could stations free from interposing objects have been found so far apart.

It was remarked, that the wick employed by Major G. was considerably smaller than that usually made, even for parlour lamps; and to this cause he attributed, in a great measure, the perfection with which the parallel rays were transmitted from the reflecting parabolic surface, so as to make them visible at so great a distance. Though a greater quantity of light is generated by a larger wick, the portion of rays reflected in a direction parallel to the axis, and which alone come to the eye, is smaller as the flame transcends the focal limit. The size of wick most advantageous for use, may easily be determined by experiment: Major G.'s impression is, that the smaller its transverse section, provided it is only large enough to escape being choked up by the charred particles, even one-third, or perhaps one-fourth of an inch, the farther the light would be visible.

It has occurred to Major G. that lanterns of this description might be used with great advantage as station marks, in extensive trigonometrical surveys requiring primary triangles of great length of sides. A revolving motion might be given to the lanterns, so as to make the light transmitted from them visible from many different stations within short intervals of time. Their simplicity, and the ease with which they are managed, would perhaps give them, for such purposes, a great advantage over the Drummond or Bude lights, even though they be not so brilliant as the latter.

The heliotrope, which he employed in the day time, was made by order of Mr. Hassler, at the instrument shop of the coast survey office. It was a rectangular parallelogram of good German plate glass, $1\frac{1}{2}$ by $1\frac{1}{2}$ inch in size, giving an area of reflecting surface of $2\frac{16}{100}$ square inches. This also was seen at the distance of thirty-six miles.

Dr. Morton read a continuation of his paper "On Egyptian Ethnography," already referred to a Committee.

The Committee appointed at the last meeting on the letter of the City Solicitor, reported at large; and it was thereupon *Resolved*, That a Committee of three persons be appointed to have charge of the interests of the Society which are involved in the claim asserted by the City Councils.

Mr. Kane, Mr. G. W. Smith, and Mr. Fraley, were appointed the Committee.